Processes to Effectively Manage the Development of the Custodial Accounting Project Are Improving

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MEMORANDUM FOR DEPUTY COMMISSIONER FOR MODERNIZATION &
CHIEF INFORMATION OFFICER

Scott E. Wilson

FROM: (for) Pamela J. Gardiner
Deputy Inspector General for Audit

SUBJECT: Final Audit Report - Processes to Effectively Manage the Development of the Custodial Accounting Project Are Improving (Audit # 200120042)

This report presents the results of our review of the development of the Custodial Accounting Project (CAP). The overall objective of this review was to determine whether the Business Systems Modernization Office (BSMO) and TRW[1] had procedures in place to ensure that the CAP meets the needs of users and is completed reasonably within the estimated costs and schedule.

The CAP is one of several projects designed to correct longstanding weaknesses in the Internal Revenue Service's (IRS) financial accounting system. The CAP is a multi-year effort with an estimated cost of about $61 million. The BSMO and TRW are currently in the middle of development activities for the CAP and expect to complete the project by May 2003.

In summary, we found that while the BSMO estimates that the actual cost and completion date for the CAP will significantly exceed initial estimates, the cost and schedule slippages were primarily caused by events that occurred prior to our audit.[2] More importantly, the BSMO and TRW addressed the issues that caused the cost and schedule slippages and implemented procedures to track and monitor the project's cost and schedule. In addition, the project team had established and generally followed risk management and change management procedures. Lastly, the project team is

[1] The Internal Revenue Service contracted with TRW, a leading provider of Information Technology and Business Systems services, to help design and develop the CAP.
[2] In September 2000, the Congress directed the BSMO to limit spending on the CAP until deficiencies in the CAP business case were corrected and the management of the CAP was integrated with the Business Systems Modernization program.

resolving concerns related to planning activities and users of the system were involved in development activities for the project.

Overall, the BSMO and TRW have implemented processes to effectively manage the development of the CAP. Nevertheless, our audit did reveal some areas where additional improvements could be made. We communicated our concerns to BSMO and TRW officials during our review, and they implemented several corrective actions to address our concerns. Because most corrective actions were taken during our review, we are only recommending that the project team follow-up to ensure the corrective action related to risk management adequately corrects the identified weakness. The corrective actions taken by BSMO and TRW officials during our review are discussed in detail in the body of the report.

Management's Response: Management's response was due on June 27, 2002. As of June 28, 2002, management had not responded to the draft report.

Copies of this report are also being sent to the IRS managers who are affected by the report recommendations. Please contact me at (202) 622-6510 if you have questions or Scott E. Wilson, Assistant Inspector General for Audit (Information Systems Programs) at (202) 622-8510.

Table of Contents

Processes to Effectively Manage the Development of the Custodial Accounting Project Are Improving

Background

The Internal Revenue Service (IRS) is currently modernizing its outdated, paper-intensive tax processing systems. This multi-billion dollar effort, known as Business Systems Modernization (BSM), is projected to last up to 15 years. One of the initial BSM projects, known as the Custodial Accounting Project (CAP), is designed to correct the IRS' longstanding custodial accounting[1] weaknesses.

The General Accounting Office (GAO) has reported numerous material weaknesses in the IRS' custodial financial management practices.[2] These weaknesses include:

- Deficiencies in controls to properly manage unpaid assessments, resulting in both taxpayer burden and lost revenue to the Government.
- Deficiencies in controls over tax refunds, permitting the disbursement of improper refunds.
- Inadequacies in the financial reporting process that result in the lack of timely and reliable information for decision-making.

These weaknesses have forced the IRS to expend tremendous resources to prepare reliable financial statements and could adversely affect any decision by IRS management and/or the Congress that is based on information obtained from the custodial reporting systems. The GAO recommended that the IRS develop a solution that would resolve weaknesses in the custodial financial reporting system.

The IRS' initial efforts to resolve the weaknesses discussed above included the Financial Reporting Release (FRR) and the Payment Information Database (PIDB) projects, which were initiated in 1997 and 1998, respectively. The IRS expended approximately $15 million on FRR and PIDB. In the fall of 1999, IRS management decided to combine these

[1] Custodial accounting relates to tracking and reporting the federal tax assessments and collections, and tax refunds.

[2] *Financial Audit: Examination of IRS' Fiscal Year 1994 Financial Statements* (GAO/AIMD-95-141, dated August 1995) and *Financial Audit: IRS' Fiscal Year 2000 Financial Statements* (GAO/GAO-01-394, dated March 2001).

projects into a single BSM project known as the CAP. The IRS transferred many of the objectives of FRR and PIDB to the CAP and used work completed under FRR and PIDB as building blocks for the CAP.

The IRS contracted with TRW[3] to assist in designing and developing the CAP. The CAP was designed to provide subsidiary ledgers for taxpayer accounts and collections, which directly feed the IRS' general ledger and financial statements. Implementation of the system would improve IRS' ability to store, analyze, and report taxpayer accounts and collections information. The ultimate goal of the CAP was to provide an automated revenue accounting and collections allocation system that is compliant with the Federal Financial Management Improvement Act of 1996.[4]

The Business Systems Modernization Office (BSMO) initially planned to complete the CAP in four separate phases. Two phases were to be completed under the Taxpayer Accounts Subledger (TASL) application, and two phases were to be completed under the Collections Subledger (CSL) application. The BSMO planned to complete the CAP by September 2004. However, during Fiscal Year 2001, the BSMO revised several projects, and CAP was restructured to include only one phase under the TASL (Build 1). The remaining three phases would be completed as part of the Enterprise Data Warehouse (EDW) project.

The BSMO currently expects to complete the revised CAP (TASL Build 1) by May 2003 at an estimated cost of $61 million. The BSMO and TRW are currently planning the scope and estimating the cost of completing the remaining three phases of the original CAP as part of the EDW. The initial estimates were that the remaining three

[3] TRW is a leading provider of Information Technology and Business Systems services.
[4] Federal Financial Management Improvement Act of 1996, Pub. L. No. 104-208, Title VIII.

phases would be completed by September 2004 at a cost of almost $77 million.[5]

The IRS has and will continue to expend a significant amount of resources to modernize its custodial financial reporting system. IRS costs to modernize its custodial financial reporting system include FRR, PIDB, CAP (TASL Build 1) and EDW (TASL Build 2 and CSL). The cost and schedule time line for these projects are shown in the table below.

Cost and Schedule Time Line for the IRS Custodial Financial Reporting System (Cost in Millions)

Project	Cost	Time Line
FRR and PIDB	$ 15	Apr 97 – Nov 1999
CAP (TASL 1)	$ 61	Nov 1999 – May 2003
EDW	$ 77	Mar 2002 – Sept 2004
TOTAL:	**$153**	[redacted]

Source: The IRS provided the cost and schedule data for the FRR and the PIDB projects. The $15 million does not include costs incurred during Fiscal Year 1997. TASL Build 1 costs and the start date for TASL Build 2 and CSL are based on spending plans and a recent adjustment to the estimated cost. The cost and schedule figures for TASL Build 2 and CSL are based on estimates contained in the CAP business case.

Our audit was conducted at the BSMO facilities in New Carrollton, Maryland, and the TRW offices in Merrifield, Virginia. The audit was conducted between October 2001 and February 2002 in accordance with *Government Auditing Standards*. Detailed information on our audit objective, scope, and methodology is presented in Appendix I. Major contributors to the report are listed in Appendix II.

[5] Initial estimates for the completion date and estimated cost for TASL Build 2 and CSL were obtained from the CAP business case.

Schedule Delays and Cost Overruns Were Adequately Monitored and Controlled

Project officials have adequate procedures in place to effectively measure and monitor project performance. Project officials compare actual cost and schedule results to budgeted results. Additionally, project officials routinely monitored cost and schedule variances during biweekly and monthly project meetings.

While cost and schedule delays were well controlled during our audit period, the CAP's estimated cost and schedule have increased significantly. The majority of the cost and schedule increase occurred prior to our audit period.

Previous cost and schedule increases

The BSMO initially planned to deploy TASL Build 1 by May 2002 at an estimated cost of about $47 million.[6] In August 2000, the BSMO and TRW revised plans developed during the CAP design phase. The revisions delayed the completion of the design phase by about 2 months.

In September 2000, the Congress directed the BSMO to limit spending on the CAP until deficiencies in the CAP business case were corrected and the management of the CAP was integrated with the BSM program. The Congressional order effectively stopped work on the development of TASL Build 1 for nearly 2 months.

In November 2000, the BSMO addressed the concerns of the Congress. However, the project could not deploy for another fiscal year due to the delays. As a result, the cost of completing TASL Build 1 increased by nearly $13 million and the deployment date was pushed back to March 2003.

Recent cost and schedule increases

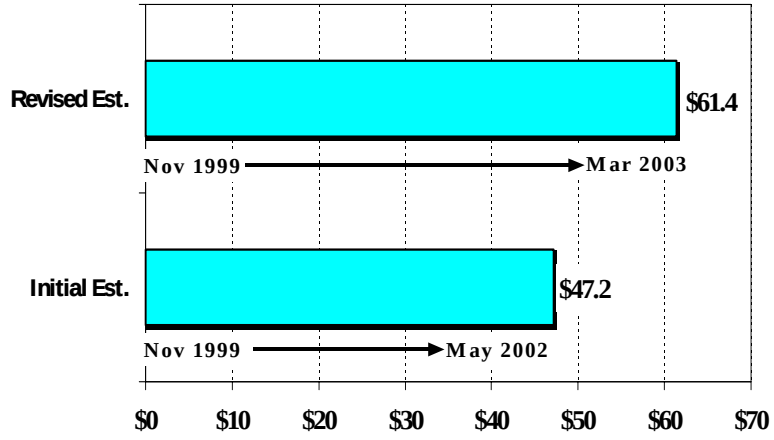
Prior to completing our audit work, the IRS temporarily reassigned critical CAP project team members. The IRS removed critical personnel from the project in order to make them available to complete activities related to the 2002 tax filing season changes. The BSMO and TRW estimated that the temporary reassignment of project resources would

[6] The estimated costs include $3.031 million to design major components of the CAP and $44.1 million to develop and deploy TASL Build 1 of the CAP.

delay the deployment of TASL Build 1 by nearly 2 months and increase costs by about $1.5 million. The IRS approved this variance.

Because of the above situations, the scheduled completion for the CAP could be delayed by nearly one year, and the cost of designing, developing, and deploying TASL Build 1 could increase by over $14 million to a total of $61 million. The graph below summarizes the cost increases and schedule delays related to TASL Build 1.

Schedule Delays and Cost Increases for CAP (TASL Build 1)



Source: IRS spending plans and a change request related to the loss of critical project resources.

Over 85 percent of the cost increases and schedule delays relate to events that occurred prior to our review. Furthermore, the BSMO and TRW have addressed the deficiencies that caused the variances.

Risk Management Procedures Are Generally Being Followed, Although Risk Reduction Actions Could Be Timelier

A risk is a potential event that, if it occurs, will adversely affect the project's cost, schedule, and/or technical performance. Risk management is the process of identifying, analyzing, and tracking risks; and assessing the probability that risks will occur and their potential impacts. Effective risk management includes collecting timely information on the status of a risk and providing that

information to the appropriate program/project personnel to support reassessing risk exposure and managing the risk.

To determine if risk management for the CAP was adequate, we reviewed risk meeting minutes, a sample of documented risks, and access rights to the TRW risk database.

Risk meeting minutes

The CAP Risk Management Plan requires a meeting to review and monitor the status of all risk management activities, track the progress of actions, and to record minutes of these meetings. Project officials periodically meet to review the status of each risk to determine whether risks should be closed, remain open, or be converted to issues.[7] These meetings are referred to as Risk Review Board meetings. We initially found that the Risk Review Board did not meet on a consistent basis. Additionally, the project did not adequately document the results of Risk Review Board meetings. If meetings are not held on a consistent basis, risks may not be monitored timely. Without formal meeting minutes, it is difficult to determine what risk decisions have been made. BSMO and TRW officials stated that risk meetings were combined with other meetings early in the development phase and were not documented.

Management Action: During our review, the Risk Review Board began to hold meetings consistently and document the results of those meetings.

Risk sample

We reviewed a judgmental sample of 6 of 24 documented CAP risks. We determined that risk management procedures are generally being followed; however, risk reduction actions could be timelier.

Risk management procedures require that risk reduction plans be prepared for certain risks, reduction actions be assigned and have a scheduled start and completion date,

[7] Once a risk has an impact on the project or a previously unidentified event has an impact on a project, the event is referred to as an issue.

and reduction plans be completed or converted to an issue before the risk impact date.[8]

We reviewed the risk reduction plans for all 6 risks and determined that risk reduction plans had been prepared and risk reduction actions were reasonable. We also noted that all risk reduction actions had been assigned with a scheduled due date.

However, we noted that:

- 5 of the 6 risks did not have a risk impact date.
- 1 risk included an impact date, but was not converted to an issue timely.
- 8 of the 14 risk reduction actions were not completed timely.

If risk reduction actions are not completed timely, the likelihood that risks will have an adverse effect on the project increases. Also, actions taken to reduce risks are often different from actions taken to handle an adverse event that has already occurred. Therefore, misclassification of an issue as a risk could lead to inappropriate actions taken by the project team.

Per CAP risk management procedures, project officials should estimate when risk reduction actions should be completed in order to avoid or prevent a risk. During our review, TRW Quality Assurance noted that project officials did not routinely complete risk reduction actions before the estimated completion date. TRW project officials also stated that the risk impact date was not a meaningful field within the risk database since some risks had multiple impact dates. Also, TRW project officials stated that the risk database was not always updated timely.

Management Action: TRW modified its database to include a field entitled "next review date." The risk database will generate risks for review by the Risk Review Board based on the date that is inserted in the "next review date" field.

[8] The risk impact date is the estimated date that a risk may occur.

TRW risk database access

The CAP project uses a risk management database to record, monitor, and report the status of identified project risks. To ensure that documented risks are not accidentally deleted or the status is not changed without proper approval, the risk database should prevent overwriting of risk numbers and ensure that only approved officials can update the risk status field. We reviewed the TRW risk database and determined that access controls were in place to prevent accidental deletion and unapproved status changes.

Recommendation

To ensure that planned corrective actions have the intended effect, the CAP project officials should:

1. Review the timeliness of risk reduction actions in the future to ensure that the addition of the "next review date" field in the TRW database is effective.

Management's Response: Management's response was due on June 27, 2002. As of June 28, 2002, management had not responded to the draft report.

The Project Team Continues to Make Improvements to Change Management Procedures

Changes on software development projects can occur either when a request is received to enhance or change a baseline,[9] or because a problem was recognized during testing. For software development projects, an effective change management process is key to success. Change management is a systematic process that ensures that changes to controlled items in each baseline are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified.

During our review, we determined that

- Change management procedures were generally being followed.
- Change management improvements were made to correct identified issues.

[9] A baseline consists of a specified set of documents, software, and other items defined as final (or point-in-time) products for a project. A baseline establishes a predefined point from which to evaluate project progress.

Change management procedures were generally being followed

To determine if change management procedures for the CAP were being followed, we reviewed Capability Maturity Model[10] evaluation results and change management documentation. In May 2001, an independent evaluator commissioned by the Software Engineering Institute[11] determined that TRW had institutionalized the key processes necessary for performing repeatable software configuration and change management activities.

We judgmentally selected samples of 3 baseline files and 18 change documents. Our review of these samples determined that:

- The project team established baselines for all 3 baseline files. The baseline files and versions were maintained in TRW's configuration repository.[12]
- BSMO and TRW personnel performed assessments as required to identify the impact that implementation of the changes would have on the project.
- The appropriate boards approved changes prior to implementation.
- Board approval documentation was prepared to implement changes.
- Test teams validated solutions implemented in response to testing problem reports.

Change management improvements were made to correct identified issues

Based on our judgmental sample, we determined that change documents were not always signed as required by

[10] The Capability Maturity Model (CMM) is a structured process that helps organizations improve their abilities to consistently and predictably acquire and develop high-quality information systems. The CMM was developed by the Software Engineering Institute.
[11] The Software Engineering Institute is a federally funded research and development center operated by Carnegie Mellon University.
[12] A configuration repository is an electronic library where products produced during systems development efforts are input, maintained and updated as appropriate.

change management procedures. However, TRW corrected these issues during the audit.

- The change originator's manager did not sign two change requests[13] and four data update requests[14] included in the sample. Change management procedures require that the originator's manager sign the change forms. If the originating manager does not sign change forms, the review boards could expend resources on changes that are not authorized, incomplete, and/or inaccurate. TRW management stated that in some cases the database had not been updated in the non-mandatory sign off field.

- On four data update requests, completed change directives[15] did not contain a sign off to indicate whether the TRW Quality Assurance group had reviewed the changes. The data update procedures require that change directives be signed by the TRW Quality Assurance group to indicate that the changes have been reviewed. If the Quality Assurance group does not sign change directives, the approving board does not have independent assurance that the changes were implemented correctly. TRW management stated that this problem is due to a lag in updates to the change management database by the CAP Data Architect.

- One data update request contained a completed change directive that had not been signed by the implementer. The data update procedures require that the implementer sign change directives. If the implementer does not sign change directives, the approving board does not have assurance that changes were implemented. TRW management stated that this problem is due to a lag in updates (or maintenance) of the change management database.

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[13] Change requests are used to record enhancements or changes to a baseline.

[14] Data update requests are used to document changes to the project's database models.

[15] When change requests and data update requests are approved, the approving authorities issue change directives to authorize implementation.

Management Actions: TRW management added the missing signatures on the change and data update requests, and updated the database. TRW management also initiated a review of other change requests and data update requests to correct any other similar occurrences, and initiated a change to the CAP change management database to make the originating manager's sign off field mandatory for completed data update requests and change requests. In addition, TRW management revised the Data Model Update procedures to require the CAP Data Group to perform accuracy checks on all updates to the database.

Since TRW took corrective actions to the issues we raised in our sample and scheduled change management process reviews in the future, we are not making any additional recommendations.

Exit Conditions From the Project Planning Phase Are Being Resolved

In September 2000, IRS officials reviewed the final CAP planning documents. The IRS agreed that the CAP could begin development work; however, certain conditions would need to be satisfied. A condition is a change required for contractual acceptance of a deliverable or work product. Unresolved conditions to planning documents could result in incomplete business and technical requirements, which could contribute to cost overruns and schedule delays.

The IRS made 5 recommendations and placed 52 conditions on the CAP team at the end of the project's planning phases. While BSM procedures for resolving conditions were not in place when the CAP team completed planning activities, the BSMO and TRW had adequate interim controls in place to ensure that conditions were resolved.

We reviewed a judgmental sample of six conditions and one recommendation resulting from the exit of planning activities. We selected conditions that we believed were most significant and reviewed the conditions to determine whether the IRS approved the resolution of each condition.

During our review, we determined that there was one outstanding condition concerning performance measures. The BSMO set a resolve-by date of October 2000 for the open condition. However, the condition was still unresolved in March 2002, about 18 months after the

resolve-by date. Also, the IRS had not required resolution of the outstanding condition in the terms of the contract with TRW.

Management Action: The BSMO and TRW established procedures for reporting project performance data consistent with IRS' reporting requirements. These new requirements were scheduled to be implemented in May 2002. Once implemented the outstanding condition should be resolved.

Since IRS and TRW have agreed on a schedule to resolve this condition, we are not making any further recommendations.

Users Were Involved in Development Activities

Adequate user involvement in the development of a new system helps ensure that the system delivered will meet the requirements of the user. We found that IRS users routinely participated in development activities. These activities included meetings to review and approve system requirements and changes to requirements previously established during the planning phases. Users also actively participated in project and program meetings designed to discuss the status of the project. During those meetings, users and project managers discussed issues that could impact the cost, schedule, and/or quality of the project deliverables.

While we found adequate evidence of user involvement, project officials did not routinely document the results of several meetings that occurred during the first few months of the development phase.

Management Action: During our review, project officials began to routinely document the results of meetings.

Since TRW has taken corrective action to document meetings, we are not making any additional recommendations.

Appendix I

Detailed Objective, Scope, and Methodology

Our overall objective was to determine whether the Business Systems Modernization Office (BSMO) and TRW[1] had adequate procedures in place to ensure that the Custodial Accounting Project (CAP) meets the needs of users and is completed reasonably within the estimated cost and schedule. To achieve this objective, we performed the following audit tests.

I. Determined whether the BSMO had adequate controls in place to ensure that all conditions related to the milestone[2] (MS) 3 exit were or will be resolved, reviewed, and approved by the Internal Revenue Service (IRS).

   A. Documented procedures and identified controls in place to ensure that conditions for the MS 3 exit were adequately resolved.

   B. Determined whether resolution of an outstanding condition was included in the terms and conditions of the contract for the next fiscal year.

   C. Determined whether a schedule existed for the resolution of the outstanding condition.

   D. Determined whether the BSMO approved the resolution of each item based on a judgmental sample. **NOTE**: The IRS made 5 recommendations and placed 52 conditions on the CAP team at the end of the project's planning phases. We selected a judgmental sample of 6 conditions and 1 recommendation so that we could concentrate on the conditions that we considered most significant.

II. Determined whether the BSMO and TRW had adequate controls in place to ensure that stakeholders were involved and their concerns were resolved during the development, testing, and integration activities.

   A. Determined whether users were adequately involved in development activities.

      1. Reviewed the minutes and supporting documentation from key project meetings held during our period of review.

      2. Determined whether risks and issues related to a lack of user involvement had been reported and adequately resolved.

[1] TRW is the vendor that the IRS has contracted with to help design and develop the Custodial Accounting Project.
[2] Milestones are critical points during the time period spent planning and developing a system. Milestone 3 is the final planning milestone.

B. Determined whether change management procedures and processes were in place.

1. Determined whether change management activities were properly coordinated between the BSMO, PRIME,[3] and TRW.

2. Determined whether controls were in place to ensure that change management procedures were being followed during the life cycle of the project.

III. Determined whether the BSMO and TRW were meeting project cost and schedule goals and identified the cause and effect of any significant cost variances or schedule delays.

A. Attempted to collect and analyze on-line project cost and schedule data. **NOTE**: Data was not available due to the fact that TRW was not reporting the requested cost and schedule data to the BSMO.

B. Constructed a timeline for the CAP cost and schedule.

C. Interviewed TRW and BSMO officials to identify the cause and effect of any significant cost variances.

D. Interviewed TRW and BSMO officials to identify the cause and effect of any significant schedule delays.

IV. Determined whether the BSMO and TRW had adequate risk management controls in place.

A. Determined the cause and effect of the lack of warning flags (trigger points) to identify potential risks.

B. Determined the cause and effect of a meeting not being held at the beginning of MS 4[4] activities to identify risks in accordance with PRIME Risk Procedures.

C. Determined who had access to make changes to the TRW risk database.

D. Determined if the risk tracking identification number field was a primary key field in the TRW risk database.

E. Determined if the Risk Review Board met on a consistent basis.

[3] Computer Sciences Corporation, also known as the PRIME contractor, is responsible for designing new systems to meet IRS business needs, developing these systems, integrating them into the IRS, and ultimately transferring operation of these systems to the IRS.
[4] Milestone 4 marks the completion of development.

F. Determined, based on a judgmental sample of project risks, if:

1. All open risks had mitigation plans.
2. The plans effectively addressed the risks.
3. Mitigation actions were tracked and on schedule.
4. The risk repository contained relevant, complete, accurate, and timely information. **NOTE**: At the time of our sample, there were 24 project risks. We judgmentally selected 6 project risks for review that we considered the most significant.

G. Determined if risks were converted to issues timely.

Appendix II

Major Contributors to This Report

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Appendix III

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